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ABSTRACT

This study examined the relationship between children's environmental attitudes and their perceived competence and locus of control. The study sample consisted of 171 children in grades 3, 4, and 5. Children completed the Children's Attitudes Toward the Environment Scale (CATES) and the Janus Environmental Attitudes Scale (JEAS), which assessed their attitudes toward the environment, and other questionnaires which assessed their perceived competence and locus of control. Additionally, children chose an environmental or nonenvironmental activity to engage in during each of three classroom educational sessions. Results indicated that children who possessed an internal locus of control had more positive scores on measures of environmental attitudes than did other children. This correlation suggests that children who feel they have control over and responsibility for their own actions and behaviors have strong pro-environmental attitudes. Results also indicated that children who scored high on measures of behavior and physical appearance had more positive environmental attitudes than did children who scored low. The study also found that the CATES had a high internal consistency and test-retest reliability, and was moderately correlated with the JEAS. (TJQ)

Children and the New 3 Rs: (Reduce, Reuse, Recycle): Attitudes Toward the Environment

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Abstract

This study examined the relationship of children's (N = 171; grades 3, 4 and 5) pro-environmental attitudes to perceived competence and locus of control. As predicted, children's pro-environmental attitudes were related to internal locus of control and high perceived competence. A secondary purpose of this research was the further assessment of the Children's Attitudes Toward the Environment Scale (CATES), which was used in this research to measure children's environmental attitudes. Test-retest reliability of the CATES was .68. Cronbach's alpha for the first administration of the CATES was .80, and for the second administration it was .85. The CATES was significantly, though not strongly, correlated with another measure of environmental attitudes, the Jaus Environmental Attitudes Scale. Children's pro-environmental attitudes were also found to be related to their choice of pro-environmental activities.

Children and the New "3 Rs" (Reduce, Reuse, Recycle):

Attitudes Toward the Environment

Eisenberg and Mussen (1989) define prosocial behavior as "voluntary actions intended to help benefit another individual or group of individuals" (p. 3), however some researchers have suggested that this definition of prosocial behavior needs to be expanded. Fogel, Melson, and Mistry (1986) state that the definition of prosocial behavior should not be limited to voluntary actions intended to benefit people. For example, people often display caring and nurturant behaviors towards animals, particularly pets. However, Fogel et al. (1986) state that this nonhuman animate category "includes not only taking care of one's pets, but environmental protection and conservation in the broadest sense." (p. 58). Using this broader definition, the development of pro-environmental attitudes a behaviors clearly fits within the context of pro-social development.

If the development of environmental attitudes is part of the more general framework of prosocial development, then we can use our knowledge of prosocial development to help guide our research of children's environmental attitudes. This connection is an especially important area to explore at a time when many schools are implementing environmental education programs, with little to no evaluation of their psychological effects on children.

Recent reports in newspapers and magazines suggest that some psychologists, parents, and educators are concerned that presenting environmental information to children may cause them to become anxious, frightened, and depressed. They fear that today's children may lose hope and optimism about the future of the world, or feel that environmental problems are too large to solve. Our research is based on a different

premise: children who feel positively about environmental issues and the role they can play in helping the earth will also feel more positively about themselves, and more in control of other aspects of their lives. This is in keeping with Bandura's (1982) theory of self-efficacy, and also with research in the area of prosocial development.

In Bandura's (1982) theory of self-efficacy, the role of individuals is emphasized. Through their internal perceptions of their power to produce an effect (efficacy), individuals determine their actions, thoughts, and feelings. Expectations concerning self-efficacy may influence children's environmental attitudes through the process of self-motivation, which necessitates adopting personal standards for one's actions and then evaluating those actions according to the level of one's standards. The goals one adopts depend in part on estimates that one can successfully enact actions necessary to reach those goals (Musser & Leone, 1986).

Personality characteristics such as perceived competence and locus of control play an important role in the child's self-efficacy. This suggests that children who are high on perceived competence and who also have an internal locus of control may set higher goals for themselves concerning environmental attitudes and behaviors, since their past history is one of being able to successfully enact actions necessary to reach their goals.

The present study investigated the relationship between children's attitudes toward the environment and other personality characteristics, specifically locus of control and perceived competence. In order to explore this relationship, children's attitudes toward the environment were assessed with the Children's Attitudes Toward the Environment Scale (CATES), a new measure developed for use in this study. Children's locus of control and

perceived competence were measured with the Nowicki-Strickland Locus of Control Scale (Nowicki & Strickland, 1973) and the Perceived Competence Scale for Children (Harter, 1982), respectively. It was predicted that children with an internal locus of control and high perceived competence would have more positive attitudes toward the environment. A secondary purpose of this study was the further assessment of the CATES as a valid and reliable scale for measuring children's environmental attitudes.

Method

Participants

Participants were 171 children (87 girls, 84 boys) from the third (n=67), fourth (n=48), and fifth (n=56) grades who attended three elementary schools located in a midwestern city. Children were primarily Caucasian and middle class. Letters describing the project and including the parents' consent form were sent home with all the students in the third, fourth, and fifth grades at two of the schools, and with all the students in the third grade at the remaining school. Only those children with parental permission participated.

Measures

Children's Attitudes Toward the Environment Scale. The Children's Attitudes Toward the Environment Scale (CATES) measures children's attitudes toward environmental issues. This 25-item questionnaire uses a format similar to the Perceived Competence Scale for Children (Harter; 1982). Each item in the CATES describes two different groups of children. Examples of items on this scale are: "Some children turn the lights off when they leave a room but other children leave the lights on." and "Some children are

excited about solar energy but other children are not excited about solar energy."

When the scale is administered, children are instructed to choose which of the two groups of children, described in the statements, they are most like. Under each statement are two boxes (one large, one small). Children check the larger box if they feel they are a lot like the children described in the statement. The smaller box is checked if they feel they are only a little like the children described in the item. Items are scored such that "4" reflects the most pro-environmental answer and "1" reflects the least pro-environmental answer. (Complete information concerning the construction and administration of the scale is available from the authors).

Jaus Environmental Attitudes Scale. The Jaus Environmental Attitudes Scale (JEAS; Jaus, 1982) measures children's attitudes toward environmental issues. This 10-item questionnaire contains items such as "People should not litter." and "Newspapers should be recycled." Children are instructed to circle a number ranging from "1" (strongly disagree with the statement) to "5" (strongly agree with the statement), where "1" is the least pro-environmental answer and "5" is the most pro-environmental answer.

Perceived Competence Scale for Children. The Perceived Competence Scale for Children (PCSC), developed by Harter (1982), contains 36 items that measure self-esteem and perceived competence. Items can be grouped into six subscales: scholastic competence, social acceptance, physical appearance, behavioral conduct, athletic competence, and global self-worth. Items are scored such that "4" reflects the child's highest judgement of his or her competence and "1" reflects the lowest judgement.

Nowicki-Strickland Locus of Control Scale. The Nowicki-Strickland Locus of Control Scale (NSLCS; Nowicki & Strickland, 1973) contains 40 items that measure children's locus of control. Items are scored such that "1" reflects a child's external orientation and "0" reflects internal orientation.

Procedure

Phase 1. In phase 1 of the research, children completed written questionnaires in two group sessions in their classrooms. Each session lasted approximately 45 minutes. The time between sessions 1 and 2 ranged from 4 to 8 weeks. During Session 1, the CATES, PCSC, and NSLCS questionnaires were administered. The CATES and the JEAS questionnaires were administered in Session 2.

Phase 2. During this phase of the research, a group of researchers (not including the primary researcher who conducted the phase 1 sessions) went into the children's classrooms and conducted three educational sessions with the children. Before the sessions began, children were given a list of three sets of activities and asked to choose one activity from each set. Each set of activities contained an environmental and a non-environmental activity choice. These included a cooking activity where children were asked to choose between learning about the rainforest and making tropical trail mix (environmental) or learning about Native Americans and making popcorn (non-environmental). An art activity involved choices between covering recycled bottles with paper scraps (environmental) or learning origami (non-environmental). For the third activity, children were asked to choose whether they wanted to see a video about saving the environment (environmental) or learning sign language (non-environmental). Once

children had made their choices, the research team came to the children's classrooms and taught each of the activity sets. Each activity set was done in a 30-minute session over a period of two to three weeks. Children were divided according to their earlier choices, with some children participating in the environmental activity and some children participating in the non-environmental activity. Although all the children in the classrooms participated (because the schools thought that the activities provided were educational and would benefit all the children), only the data from children with parental permission were analyzed.

Results

Reliability of the CATES

Test-retest reliability of the CATES was assessed either at 4, 6, or 8 weeks. The overall test-retest correlation for the entire sample was .68. Cronbach's alpha for the first administration of the CATES was .80. The Cronbach's alpha for the second administration of the CATES was .85.

Relationship of the CATES with other Environmental Attitudes Measures

The CATES was significantly, but not strongly, correlated with the JEAS, r (156) = .18, $p < .05$.

Relationship of the CATES with Locus of Control and Perceived Competence

Correlations were calculated to assess the relationship of children's environmental attitudes with locus of control and perceived competence. For these analyses, only the score obtained from the first administration of the CATES was used, since it was given at the same time as the NSLCS and the PCSC. It was predicted that scores on the CATES would correlate negatively with external locus of control, that is, that high (pro-environmental) scores would be associated with low scores on the NSLCS, with low scores

indicating internal locus of control. We also predicted that pro-environmental scores would correlate positively with perceived competence. Consistent with these predictions, a significant negative relationship was found between children's pro-environmental attitudes and locus of control, r (161) = -.20, $p < .01$. Significant positive relationships were found between pro-environmental attitudes and several subscales of the PCSC, specifically the behavioral conduct subscale, r (160) = .24, $p < .005$, and the physical appearance subscale, r (160) = .22, $p < .005$. See Table 1 for the complete correlation matrix.

Relationship of Children's Environmental Attitudes to Behavior

Children's choice of activities (1 = environmental activity, 0 = non-environmental activity) were summed to create a behavioral choice score. A score of 0 reflected no environmental activity choices and 3 reflected the maximum number of environmental activity choices. Time 1 and Time 2 scores on the CATES were averaged for each child to develop a mean environmental attitudes score ranging from 1 (least environmental) to 4 (most environmental). Mean environmental scores were used to give a more stable measure of children's environmental attitudes, however, if a child took the CATES at only one session, the score from that session was used. A median split was done on the mean environmental scores. Children with scores below 3.35 were classified as low on environmental attitudes (n=73), while children with scores above 3.35 were classified as high on environmental attitudes (n=74).

A 2 (high vs. low environmental group) x 3 (grade) x 2 (sex) analysis of variance (ANOVA) was conducted with behavioral choice scores as the dependent variable. A main effect was found for environmental attitudes,

$F(1)=4.24$, $p < .04$. Children with higher environmental attitudes chose more environmental activities ($M=1.43$) than the low environmental group ($M=1.21$). No significant main effects were found for grade or sex, and there were no significant interactions.

Discussion

This study examined the relationship between children's environmental attitudes and other personality characteristics, specifically locus of control and perceived competence. It was predicted that children who had an internal locus of control and higher perceived competence would have more positive attitudes toward the environment. These predictions were confirmed by this study. Children who possessed an internal locus of control also had significantly more positive scores on a measure of their environmental attitudes. This correlation suggests that children who feel that they have control over, and responsibility for, their own actions and behaviors also have stronger pro-environmental attitudes. This relationship seems logical. If children do not feel that they have any control over the immediate world around them, then they are unlikely to believe that they can make a difference in the global struggle to aid the planet.

In addition, several scales of the Perceived Competence Scale for Children (Harter, 1982) were significantly and positively related to children's environmental attitudes. Specifically, children who scored higher on subscales measuring their behavioral conduct and physical appearance had more positive environmental attitudes. Questions on the subscale concerning behavioral conduct include items about "doing the right thing" or "acting the way they know they are supposed to." It is possible that for children of this age group, environmental concern and pro-

environmental behaviors are viewed as something society or parents think should be done. If this is true, then children who report that they usually "do the right thing" would also be more likely to engage in pro-environmental activities, such as recycling. It should be noted, however, that significant positive correlations were found between this subscale and children's environmental attitudes for fourth and fifth graders, but not for third graders. In addition, sex differences were found, with boys' environmental attitudes showing highly significant positive correlations with this subscale. and girls demonstrating a low and non-significant relationship. It is not clear why these differences were found.

The relationship between children's environmental attitudes and feelings about their physical appearance are also puzzling. At first glance, it does not seem to make sense that children who are pleased with their physical appearance are also more pro-environmental. However, if one reads this subscale carefully, one will notice that the words "happy" or "like" are present in all six questions. It is possible that for this age group, feelings of happiness and contentment are connected with feelings about personal appearance. Perhaps the physical appearance subscale is tapping into more general feelings of self-esteem or self-worth for this age group. This relationship deserves further examination since relatively high correlations were found between physical appearance and environmental attitudes for all three age groups and for both sexes.

A secondary purpose of this research was the further assessment of the CATES, a measure of children's environmental attitudes. This scale was found to have high internal consistency and test-retest reliability. The environmental attitudes measured by the CATES were also found to be

significantly related to environmental behaviors. Children who had more positive environmental attitudes were also more likely to choose to participate in environmental activities when given a choice between a pro-environmental activity, and an equally appealing and matched non-environmental activity. In addition, the CATES was found to be moderately correlated with another environmental attitude measure, providing some evidence of convergent validity. Finally, the CATES was found to be easy to administer, and developmentally appropriate for grade school children.

Overall, the results of this study indicate that children's environmental attitudes can be measured effectively, and that they do relate to other variables, specifically locus of control and perceived competence. These results suggest that the CATES may be a useful tool for continuing and expanding this important area of research.

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Table 1

Correlations Between the Children's Attitudes Toward the Environment Scale and the Locus of Control Scale and the Subscales of the Perceived Competence Scale for Children

Correlation of CATES With:	3rd Grade Boys	3rd Grade Girls	4th Grade Boys	4th Grade Girls	5th Grade Boys	5th Grade Girls	All Third Graders	All Fourth Graders	All Fifth Graders	All Boys	All Girls	Total Sample
Locus of Control	-.35 (n=30)	-.21 (n=31)	-.37 (n=19)	-.19 (n=27)	-.21 (n=30)	-.20 (n=24)	-.26* (n=62)	-.25 (n=46)	-.20 (n=54)	-.23* (n=79)	-.18 (n=82)	-.20** (n=161)
Global Self-Worth	.45** (n=31)	-.03 (n=31)	.09 (n=19)	.05 (n=27)	.04 (n=28)	.07 (n=25)	.16 (n=62)	.08 (n=46)	.02 (n=53)	.15 (n=78)	.04 (n=83)	.08 (n=161)
Athletic Competence	.21 (n=30)	-.05 (n=29)	.23 (n=19)	-.13 (n=27)	-.38 (n=28)	.15 (n=25)	.05 (n=59)	.01 (n=46)	-.19 (n=53)	-.08 (n=77)	-.04 (n=81)	-.08 (n=158)
Physical Appearance	.37* (n=30)	.11 (n=31)	.30 (n=19)	.32 (n=27)	.21 (n=28)	.20 (n=25)	.22 (n=61)	.29* (n=46)	.18 (n=53)	.28** (n=77)	.20 (n=83)	.22*** (n=160)
Behavioral Conduct	.22 (n=30)	.02 (n=31)	.40 (n=19)	.13 (n=27)	.38 (n=28)	.12 (n=25)	.13 (n=61)	.31* (n=46)	.29* (n=53)	.31** (n=77)	.11 (n=83)	.24*** (n=160)
Social Acceptance	.27 (n=31)	-.29 (n=30)	.02 (n=19	-.20 (n=27)	-.04 (n=28)	.05 (n=25)	-.01 (n=61)	-.09 (n=46)	-.01 (n=53)	.07 (n=78)	-.14 (n=82)	-.03 (n=160)
Scholastic Competence	.43* (n=31)	.04 (n=30)	-.21 (n=19)	.17 (n=27)	.28 (n=28)	.16 (n=25)	.24 (n=61)	.01 (n=46)	.22 (n=53)	.20 (n=77)	.09 (n=82)	.14 (n=160)

* $p < .05$
** $p < .01$
*** $p < .005$